Telehealth Primer:

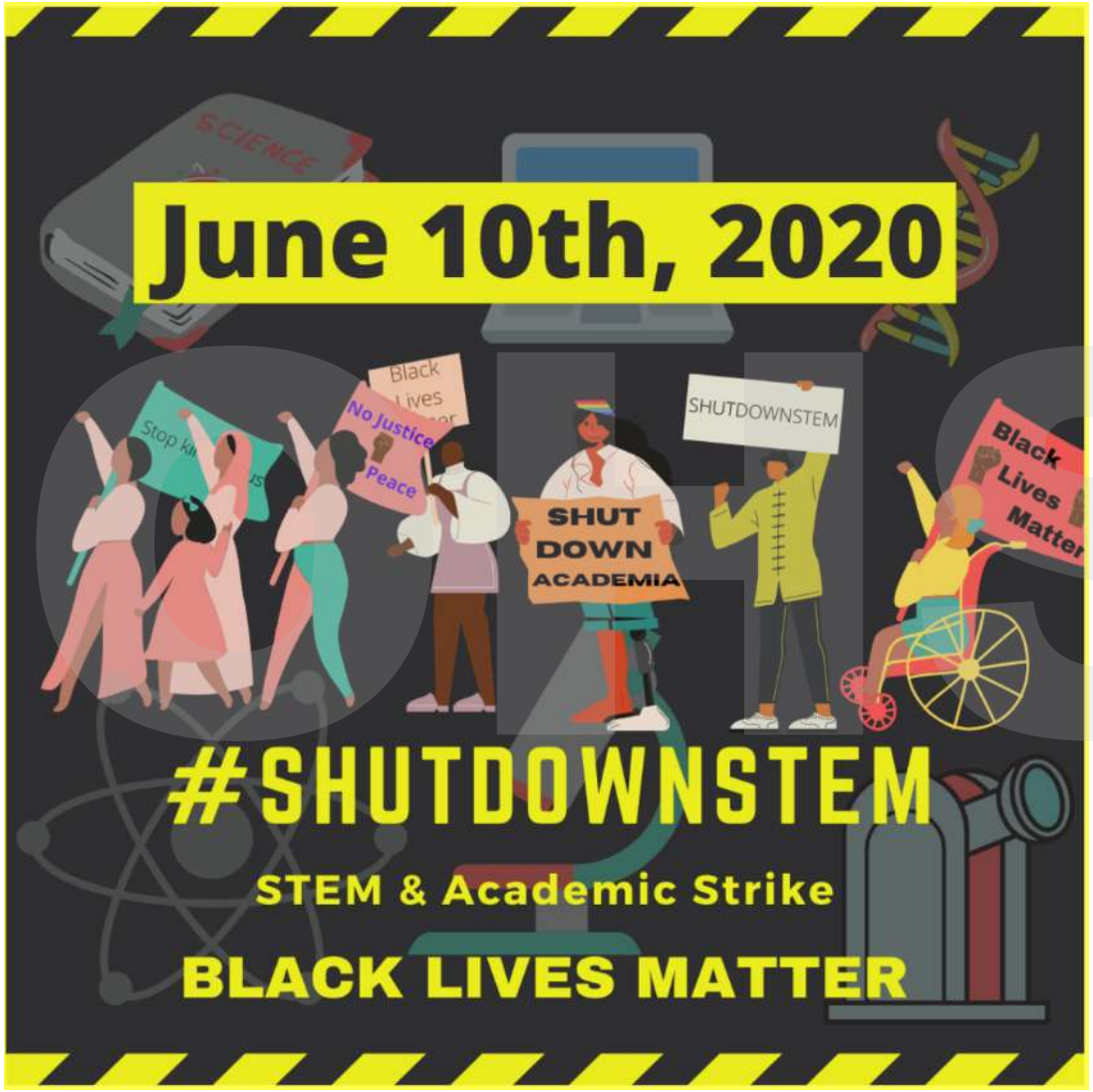
The Right Care at the Right Place at the Right Time

Miles Ellenby, MD
Professor , Ped Critical Care
Medical Director, Telehealth Services

Anthony Cheng, MD
Assistant Professor, Family Medicine. Medical Director, COVID Connected Care Center

Amber Hoffman, , MSN, RN
Clinical Educator, Telehealth

Gianou Knox, MPH
Program Manager



All ordinary meetings of classes, research groups, and seminars should be cancelled or replaced with discussions with colleagues about anti-Black bias in the world and in academia.

OHSU

What has brought us here today?

The Power of Video and Connectivity

- in the delivery of healthcare
- during the global response to COVID-19
- to shine a light on racial disparities in policing
- to facilitate a global discussion about racism

Equity in Telehealth

Telehealth is about increasing access to care,
regardless of geography & time constraints

The Digital Divide:

- any uneven distribution in the access to, use of, or impact of Information and Communication Technologies between any number of distinct groups… based on social, geographical, or geopolitical criteria, or otherwise
- term coined by Larry Irving as head of National Telecommunications and Information Administration in 1990s

Digital Denied: The Impact of Systemic Racial Discrimination on Home-Internet Adoption (2015)

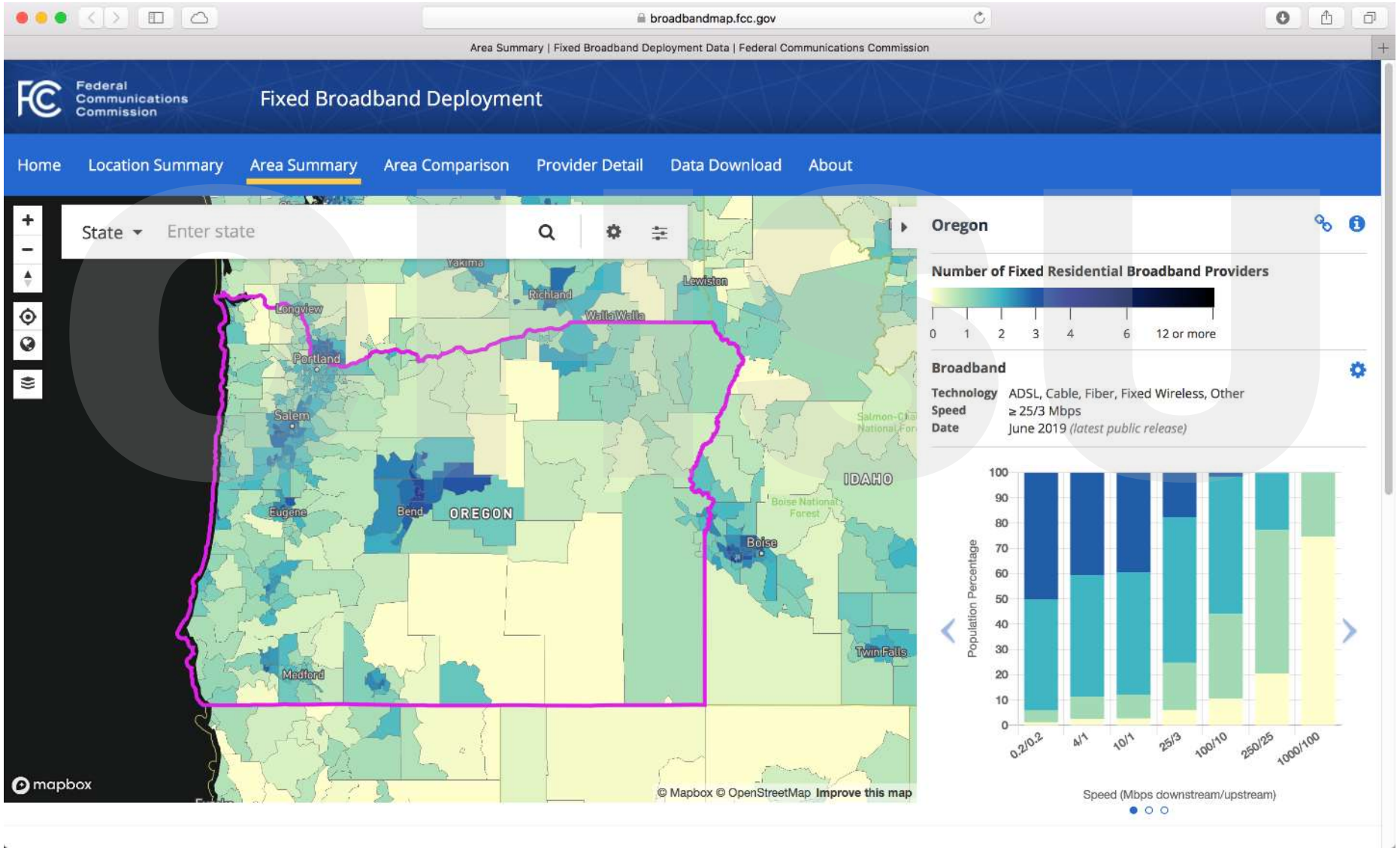
	Home Internet (wired or wireless)
White	81
Asian	83
Hispanic	70
Black	68
Native Americans	72
Native Hawaiian/Pacific Islanders	68

"Differences in income across race and ethnicity do not explain the entirety of this digital divide"

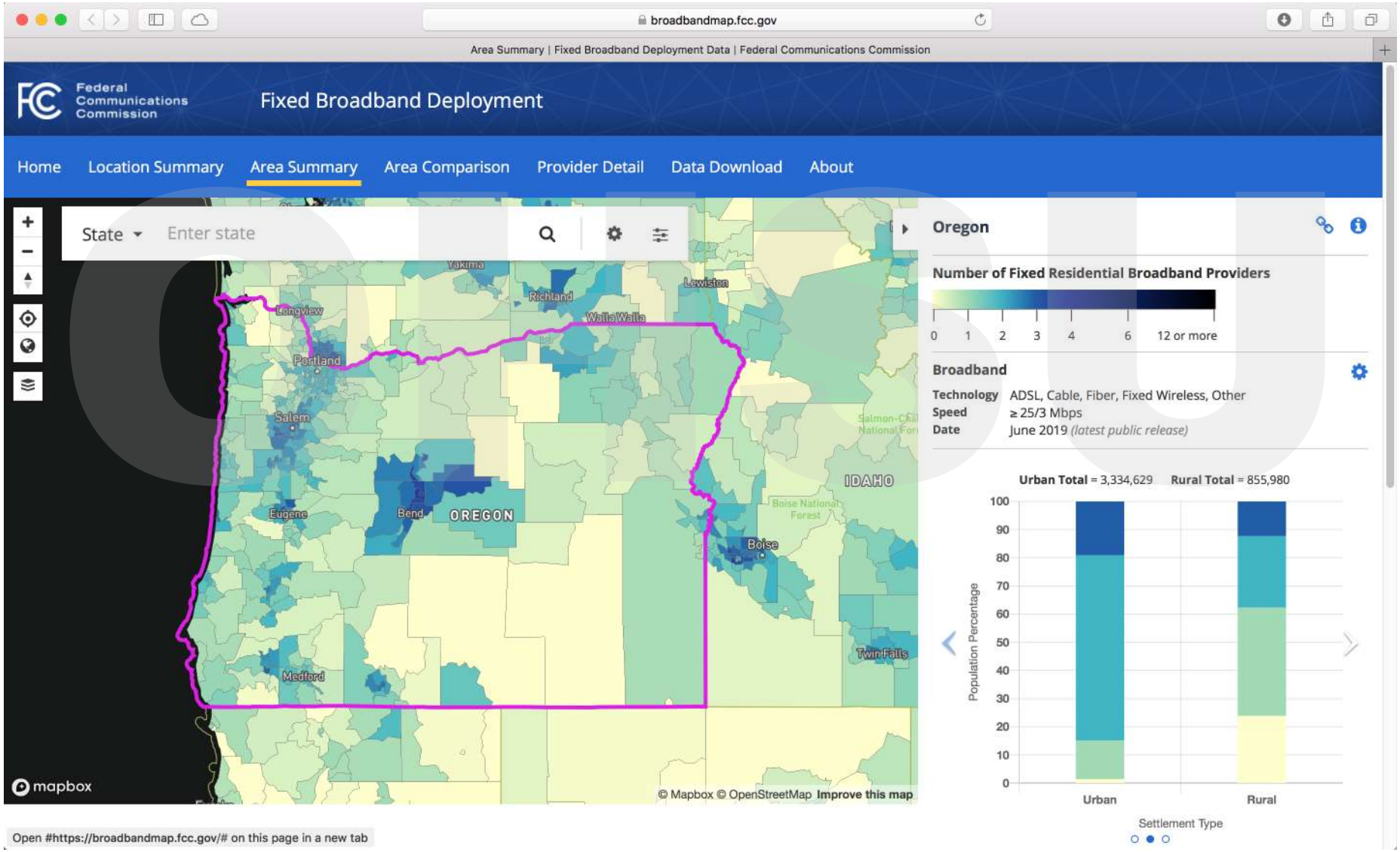
freepress
www.freepress.net

OHSU

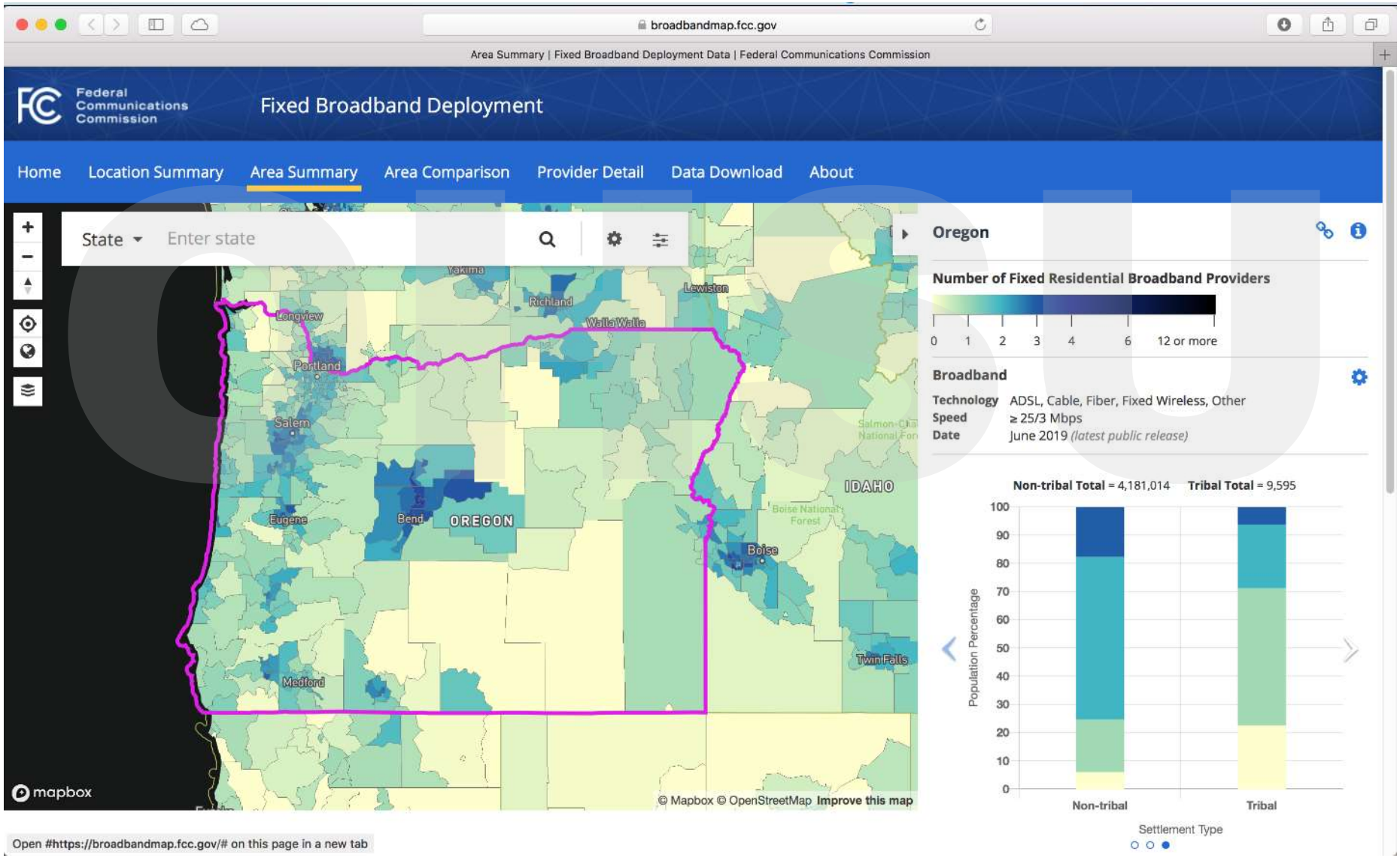
OR Broadband Map



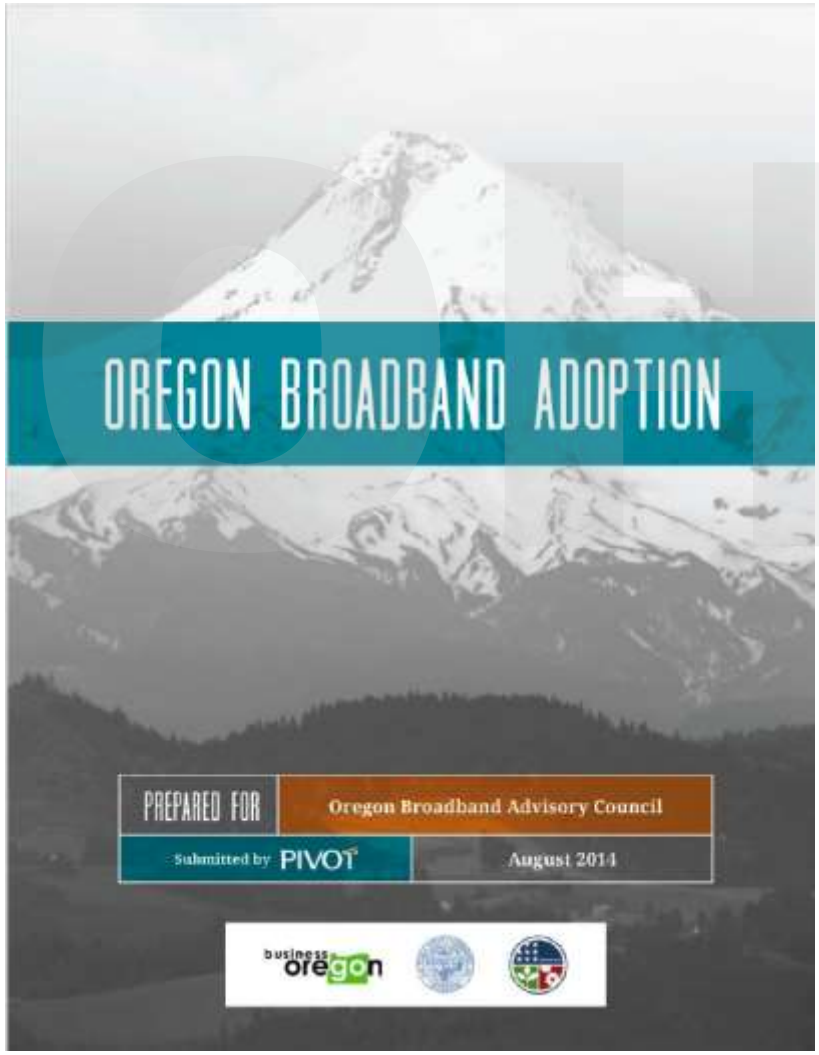
OR Broadband Map



OR Broadband Map



OR Broadband Adoption



- broadband adoption
- computer ownership
- service availability
- Internet use
- barriers to adoption
- perceptions of cost
- user satisfaction

OHSU

Digital Inclusion – 5 elements

1) affordable, robust broadband internet service
2) internet-enabled devices that meet the needs of the user
3) access to digital literacy training
4) quality technical support
5) applications and online content designed to enable and encourage self-sufficiency, participation and collaboration

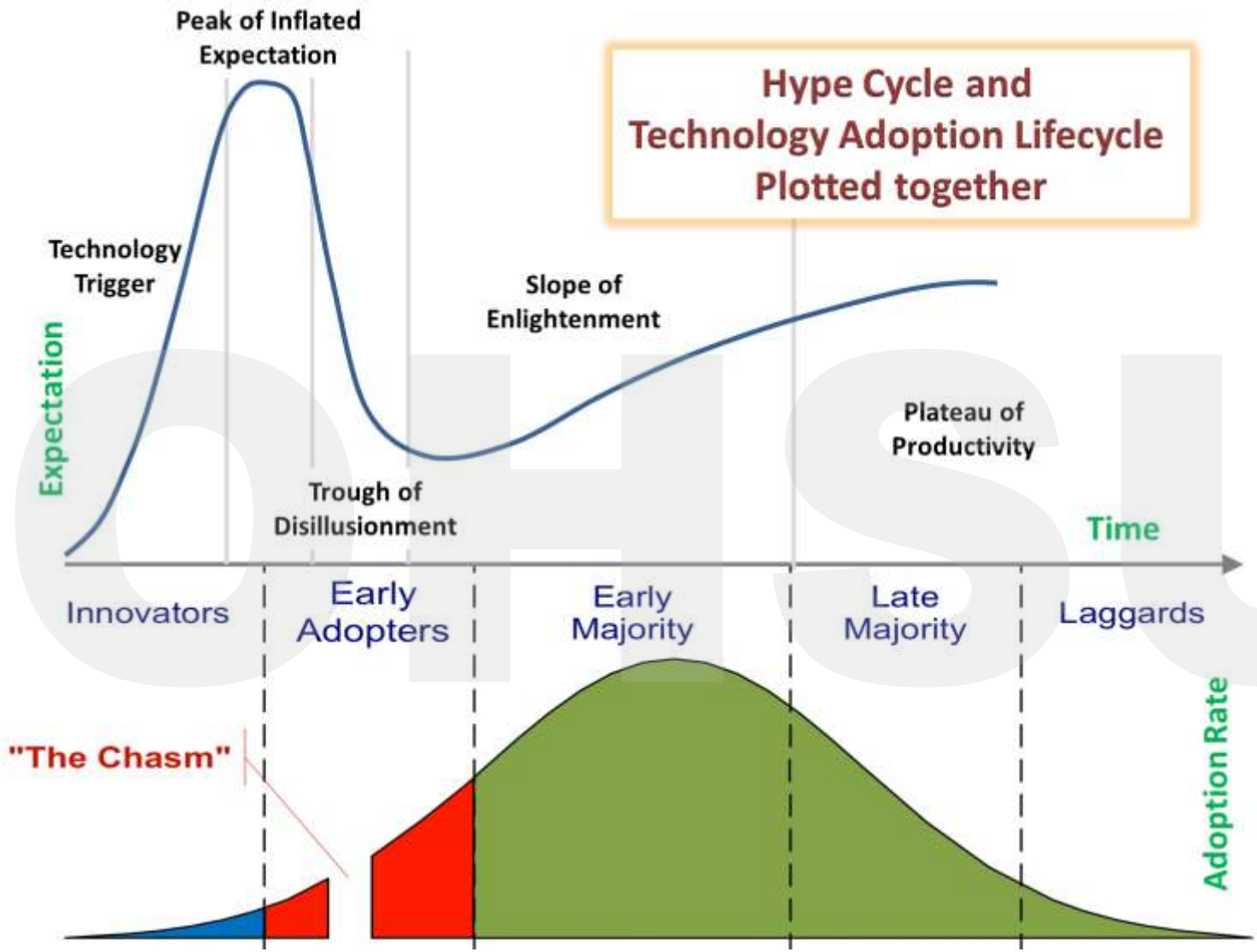
National Digital Inclusion Alliance - 2015

What is TeleHealth?

Not a New Idea

"Diagnosis By Radio"
Science and Invention
February 1925

OHSU



Technology Adoption Lifecycle - Everett Rogers (1962) - *Diffusion of Innovations*
- Geoffrey Moore(1991) - *Crossing the Chasm*

Hype Cycle - Gartner (1995)

OHSU

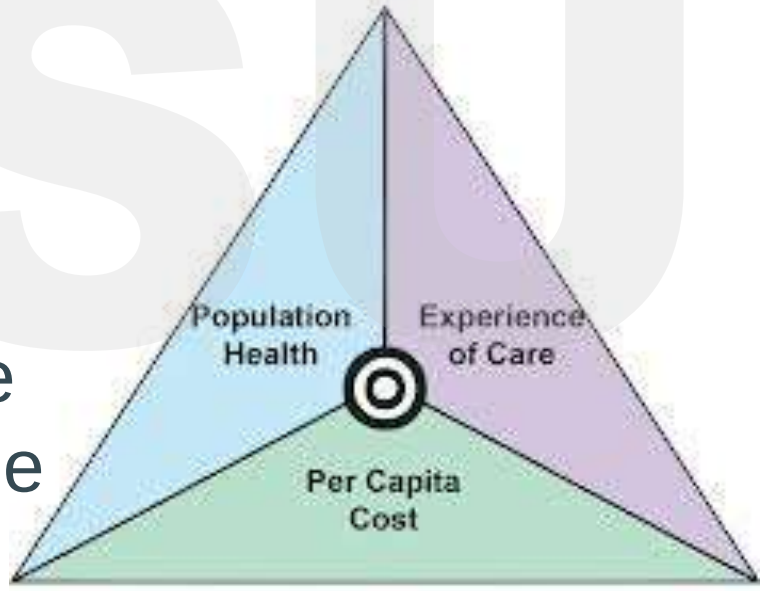
Telehealth Primer

Why?

Institute for Healthcare Improvement

The ~~Triple~~ Quadruple Aim of Healthcare Reform

- Improving access
- Improving outcomes while:
  - Keeping patients as close to home as safely possible
  - Reducing cost



IHI Triple Aim

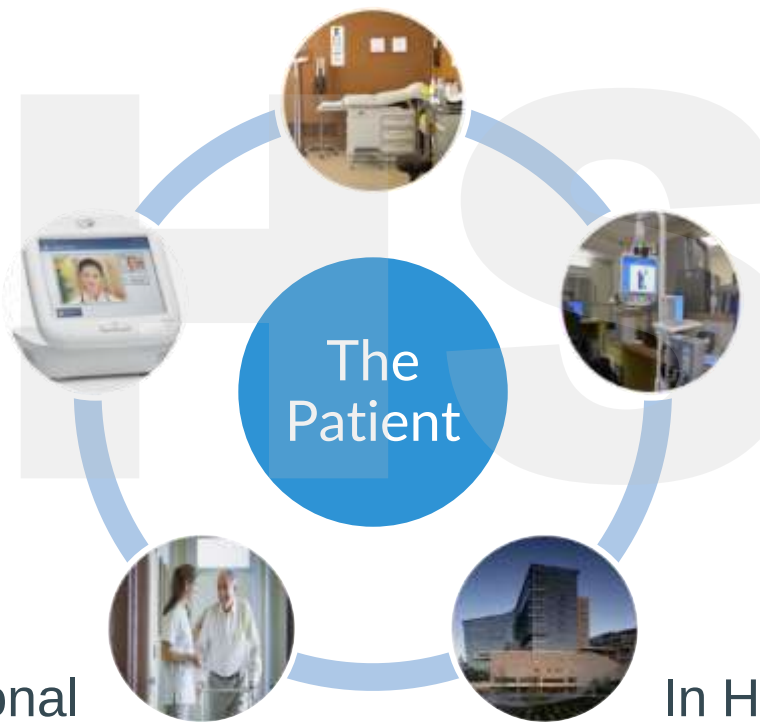
- Improving provider experience (and efficiency?)

OHSU

What is Telehealth?

- *Interactive healthcare over distance using telecommunication technology*
  - Store & Forward (Imaging, EEGs, ECH
  - Face-to-Face interactive
  - Remote Pt Monitoring
- Applications for different clinical scenarios
  - Inpatient/Outpatient
  - Asynchronous/Synchronous

Telehealth Across the Care Continuum



Recognizing Limitations OR "It can't be as good."

In-person care is the gold standard… when possible, when necessary.

Telemedicine's intent:

- increase access for those who are unable to obtain in-person care (geography, time, etc)

On the spectrum of how care can be delivered

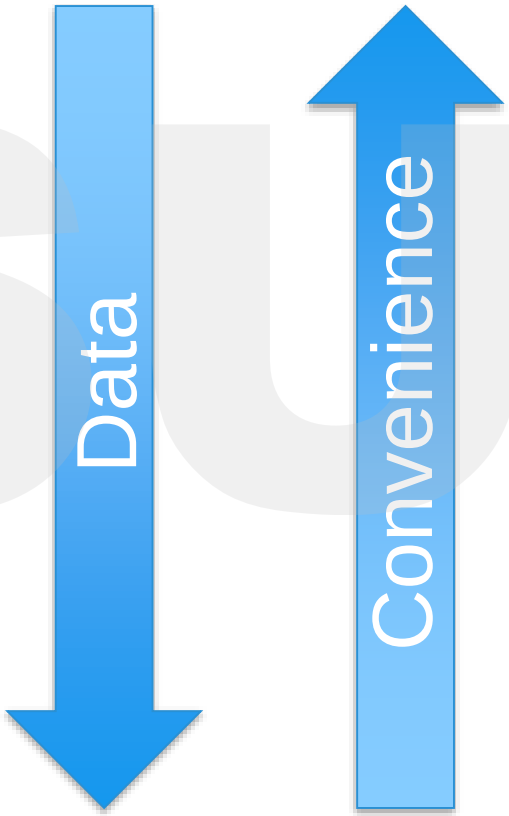
No Care due to access limitations

Asynchronous (Store & Forward)
Email, Text, Web Portal

Audio (aka TelePhone)

Video (aka TeleMedicine)

In Person



Motivation – The Desire & Reality of Access to Care

Desire

Specialty services everywhere & at all times

Realities

Children – 27% of all ER visits

Only 6% of US ER's have all necessary pediatric supplies

Emergency Care for Children: Growing Pains
Institute of Medicine 2006 Report

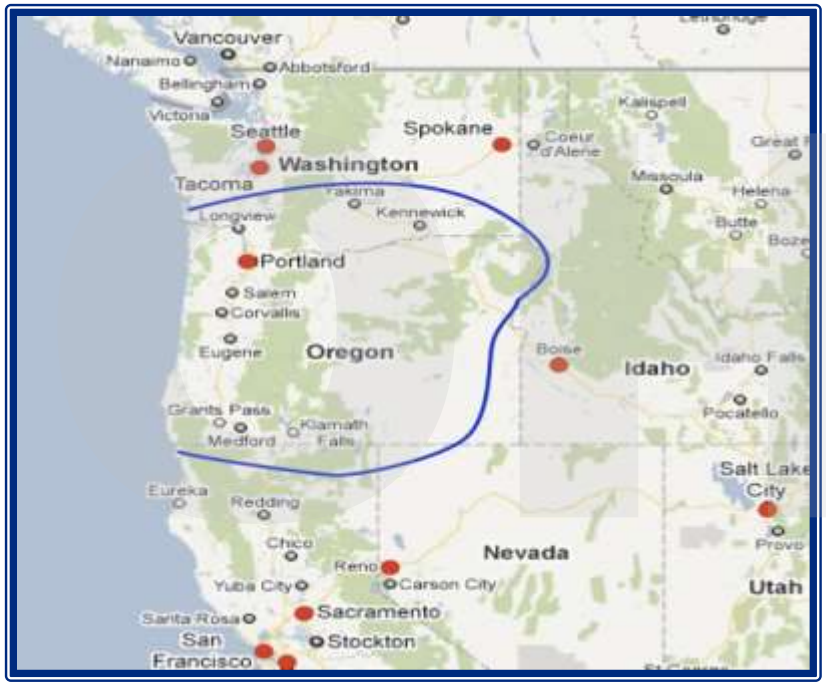
Regionalization of services improves Quality of Care and Outcomes

Consensus report from the Pediatric Section of SCCM Task Force on Regionalization of Pediatric Critical Care

Crit Care Med 2000; 28: 236-239

Oregon & Pediatric Intensive Care

Limited Access due to Geography:



Only 3 PICUs in region
< 10 miles apart in Portland

> 100,000 sq. mile catchment area

> 800 neonates & infants transported/year to our center alone

Many transported unnecessarily, at great risk, & expense
Some inadequately resuscitated

Due to poor data exchange/communication

OHSU

Triage Decisions

- Consult calls 24/7/365
- The Dilemma for ER MD, Pediatrician, & PICU

  Whether to transport…

  Based on a verbal report &

  institutional, provider and parental comfort levels
- Who is impacted by the Decision?

  Child

  Parents

  Transport Team

  Financial Impacts to Healthcare System, Family, & Local Economy

PANDA to Eugene (ground ambulance)	$9,000
PANDA to Klamath Falls (fixed wing)	$24,000

Telemedicine

Telephone Call: *Helpful*

Picture: *A Thousand Words*

Live Interactive Video: *Priceless*

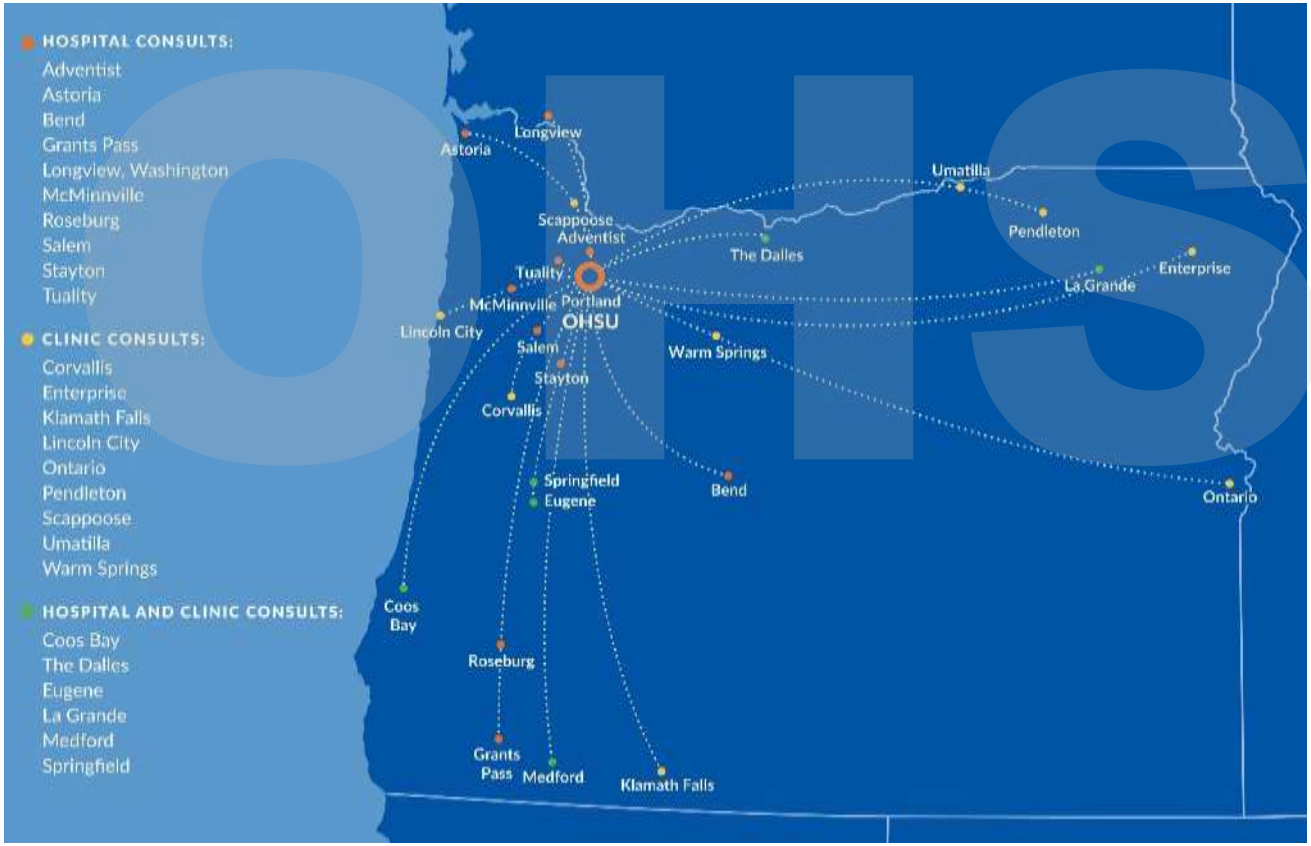
Replaces the Anonymity of a Phone Call

with the Intimacy of Live Interactive Video

OHSU Acute Care Telemedicine Network

2007 – PICU pilot with Sacred Heart , Eugene

Goals: improve triage (reduce unnecessary transports), support resuscitation



2010 - Network

- PICU
- Stroke
- Newborn Resuscitation
- TeleICU

2019 - Virtual ICU

OHSU

Acute Care Telemedicine

Over 3,000 consults since inception

16 hospitals in Oregon & SW Washington

- > $15M estimated in avoided transport costs

- Many pts able to remain in local community
  - Varies by service line & community hospital

Tele – Newborn Resuscitation

- Small Oregon Community Hospital
  - baby not tolerating labor → "Crash" C-Section
  - Family Medicine doctor on call from home
- 5:32 AM – C-Section
- 5:41 AM – Baby born → bradycardic, cyanotic → CPR
- 5:43 AM – OHSU NICU 'arrives' to support local team

Tele – Newborn Resuscitation

- Video not available for distribution

Ambulatory TeleHealth

- Delivering Value to Patients , Providers, Payers
  - Appropriate follow-up care
  - Improves compliance & outcomes
  - Cost containment

- Multiple applications
  - Home or clinic setting
  - Post-op checks
  - Primary Care
  - Chronic Disease Mgmt
  - Less mobile populations

OHSU ⟷ pt@ home

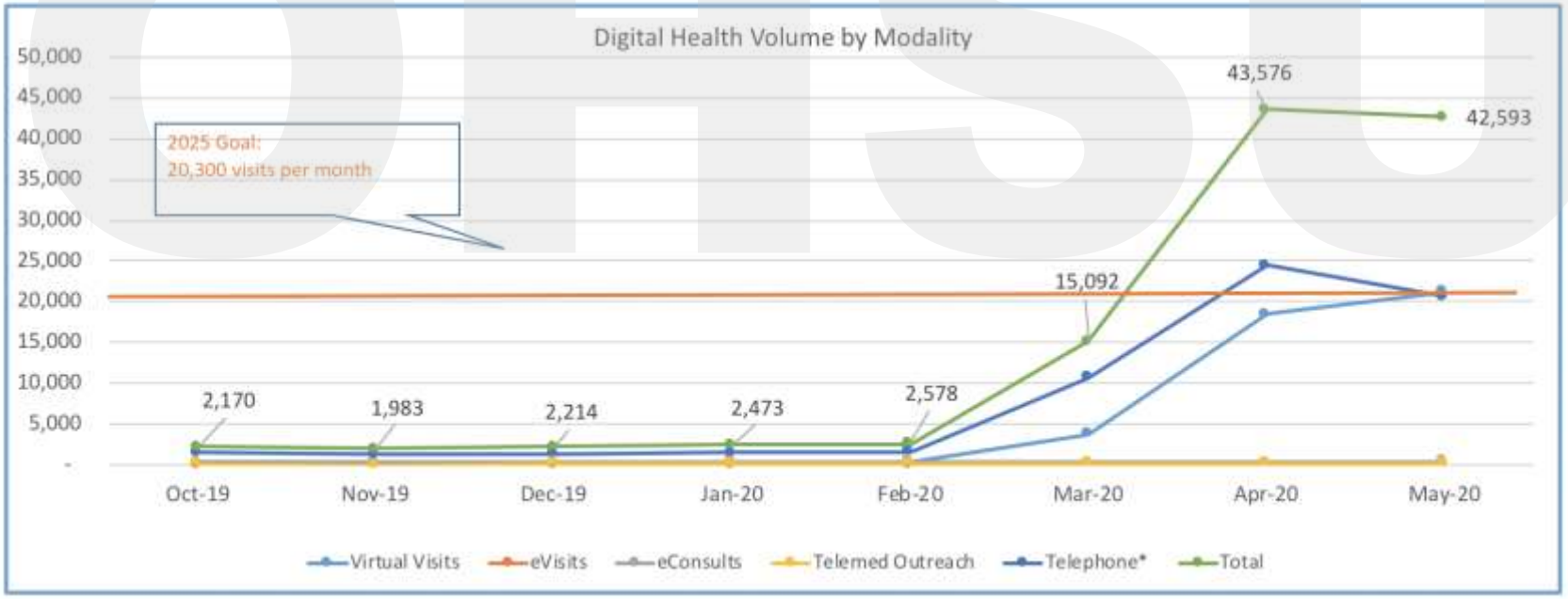
Virtual Visits—Primary, Specialty, & Urgent

July 2018-April 2020 Digital Health Volumes

Data includes OHSU and Hillsboro Medical Center

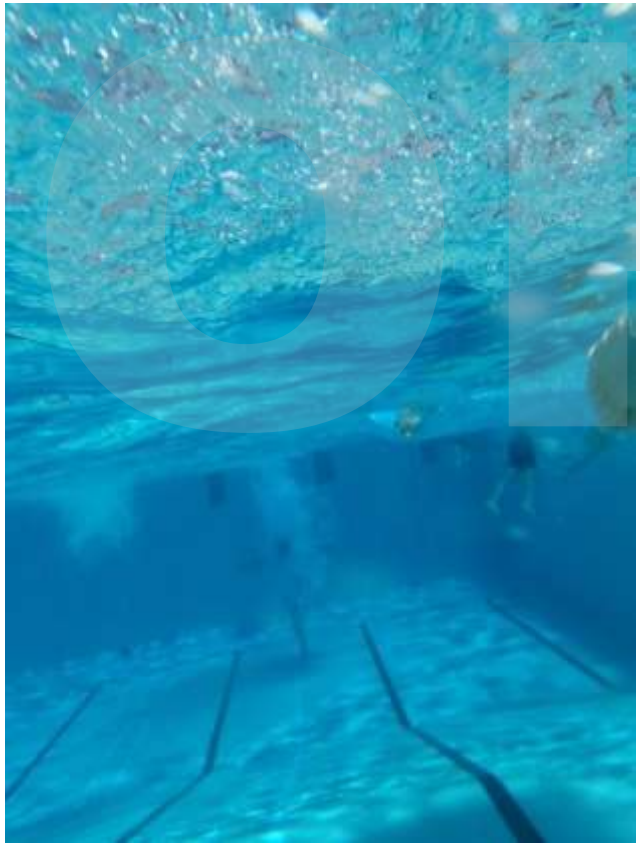
DH Modality	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	FY 2020
Virtual Visits	254	235	301	344	300	3,752	18,410	21,251		45,592
eVisits	69	69	76	94	78	187	242	252		1,275
eConsults	226	297	279	406	456	319	275	344		3,255
Telemed Outreach	121	104	143	108	116	142	159	134		1,348
Telephone*	1,500	1,278	1,415	1,521	1,628	10,692	24,490	20,612		63,634
Total	2,170	1,983	2,214	2,473	2,578	15,092	43,576	42,593	-	115,104
FY 20 Goal	1,333	1,333	1,333	1,333	1,333	1,333	1,333	1,333	1,333	16,000

*Telephone encounters include Perioperative clinic encounters



OHSU

Jumping into the Telehealth Deep End – Sinking or Swimming?



7 Steps for Success

1. Prepare Yourself
2. Prepare Patients, see the Digital Divide
3. Acquire Tools & Technology
4. Prepare Your Team
5. Have a Good Visit
6. Assess Outcomes and Adapt
7. Advocate for Payment Reform

OHSU

1. Prepare Yourself

- Identify barriers and address them

Problem	Solution
Fear of Poor Quality Care	Data
Doubt ability to build rapport with a patient telephonically	Study up!
Frustration with the process	Identify tools, technology or staff support
Health equity	Data, tools, technology, remove barriers, staff support, and advocacy

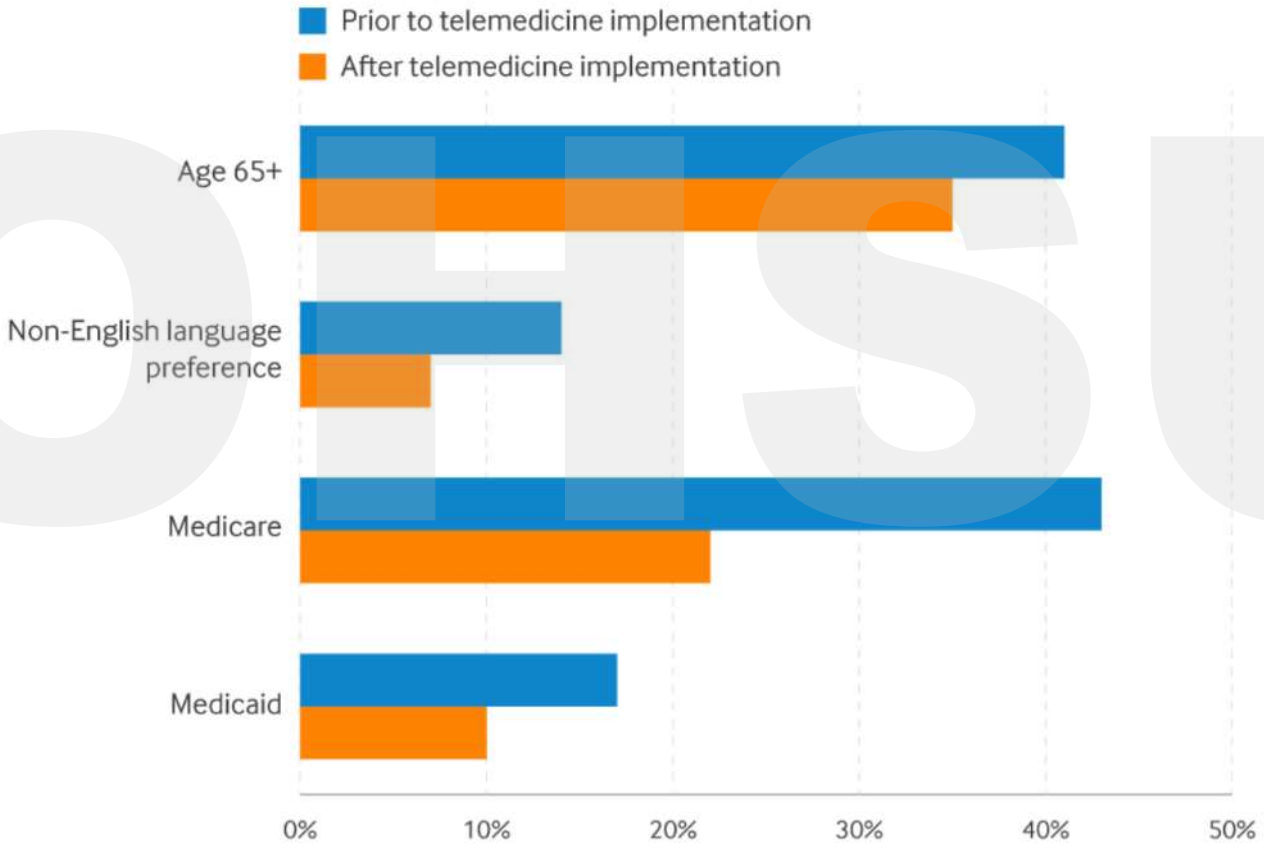
2. Prepare Patients

	Home Broadband	Smartphone	Desktop / Laptop
All Americans	75%	83%	74%
>65	59%	53%	
Black/African American	66%	80%	
Rural	63%	71%	69%
Income <$30,000	56%	71%	

Pew Research Center. Internet/Broadband Fact Sheet and Mobile Fact Sheet https://www.pewresearch.org/internet/fact-sheet/internet-broadband/

Patient Visits by Age, Language, and Insurance Before and After Telemedicine Scale-Up

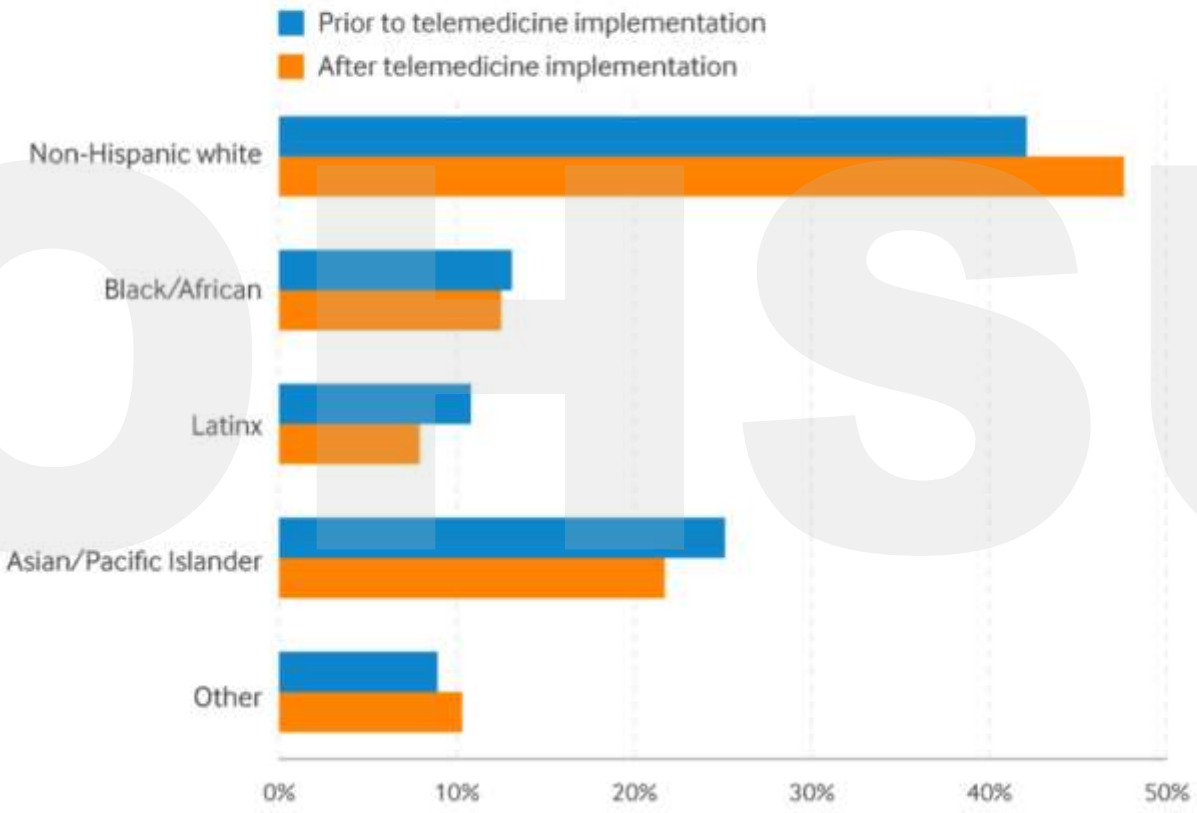
This chart shows the proportion of patient visits seen by age, language preference, and insurance type prior to (2/17–2/28/2020) and after (3/23–4/3/2020) scaled-up telemedicine implementation to address the Covid-19 pandemic at the UCSF General Internal Medicine Primary Care Practice (P=0.002 for age ≥65 and P<0.001 for other comparisons). A significantly smaller proportion of visits after scaled-up telemedicine implementation were with vulnerable patients.



Nouri S, Khoong E, Lyles C, and Karliner L. Addressing Equity in Telemedicine for Chronic Disease Management During the COVID-19 Pandemic. NEJM Catalyst.
https://catalyst.nejm.org/doi/full/10.1056/CAT.20.0123

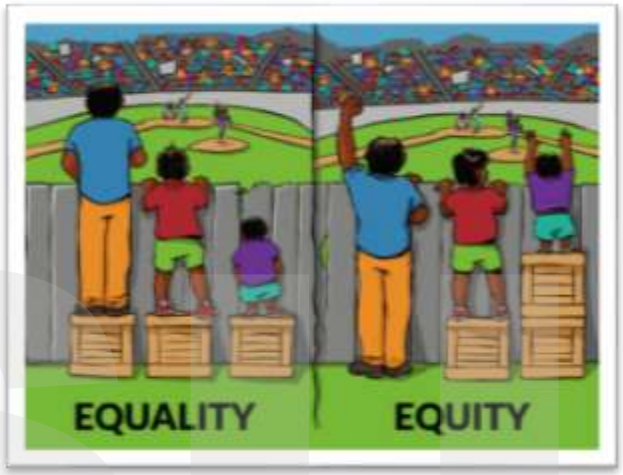
Patient Visits by Race/Ethnicity Before and After Telemedicine Scale-Up

This chart shows the proportion of patient visits seen by patient race/ethnicity prior to (2/17–2/28/2020) and after (3/23–4/3/2020) scaled-up telemedicine implementation to address the Covid-19 pandemic at the UCSF General Internal Medicine Primary Care Practice (P=0.006 using chi-squared test). A smaller proportion of visits with vulnerable populations occurred after implementation.



Nouri S, Khoong E, Lyles C, and Karliner L. Addressing Equity in Telemedicine for Chronic Disease Management During the COVID-19 Pandemic. NEJM Catalyst.
https://catalyst.nejm.org/doi/full/10.1056/CAT.20.0123

2. Prepare Patient (with Equity in Mind)



- Identify potential disparities in access
  - Older adults
  - Low SES
  - Limited Health Literacy
  - Limited English Proficiency
  - Racial/Ethnic Minorities

2. Prepare Patient (with Equity in Mind)

- Mitigate digital literacy and resource barriers
  - Develop education and training materials
  - Inform patients about free and low cost access to broadband and devices:
    - Digital Inclusion Network "Resource Document"
  - Workflows: "Virtual Visit Concierge"

2. Prepare Patient (with Equity in Mind)

- Remove Health System Barriers
  - Offer video visits to every patient
  - Ensure access to interpreters
  - Screen for barriers
  - Offer telephone as an alterative to video
  - Increase system leader awareness of barriers to telemedicine

3. Acquire Appropriate Tools & Technology

- HHS and OCR are exercising "enforcement discretion" related to HIPAA.
- Directories for vendors:
  - https://www.techhealthdirectory.com/
  - https://telemedicine.arizona.edu/servicedirectory

4. Prepare Your Team

- Workflows
- Scripting
- Scheduling Guidelines

5. Have a Good Visit

Workarounds	New Opportunities
• Patient reported vitals • Self-exam • Visualize a lesion • Teleprompter	• Medication Review • Use bystander to collect collateral information • Close follow-up

OHSU

5. Have a Good Visit

Establish Rapport	New Opportunities
• Prepare with intention • Listen intently and completely • Agree on what matters most • Connect with the patient's story • Explore emotional cues	• Look at the camera to make eye contact • Adjust lighting • Ensure patient privacy

Zulman DM, Haverfield MC, Shaw JG et al. Practices to Foster Physician Presence and Connections with Patients in the Clinical Encounter. JAMA. 2020. https://jamanetwork.com/journals/jama/article-abstract/2758456

OHSU

6. Assess Outcomes and Adapt

- Quality Improvement Team:
  - Front desk staff, medical assistants, back office staff, providers
- Data:
  - Volume, Access, Productivity, Quality

7. Payment Reform

Existing payment reforms have expiration dates

	Before March 1	After March 1
Virtual (99213)		
Commercial (United Healthcare)	**Facility Rate ($107)**	**Office Rate ($153)**
Medicare	**Facility Rate ($52)**	**Facility Rate +Q3014 ($79.81)**
Telephone (99442, 11-20 min)		
Commercial (United Healthcare)	**$0**	**Office Rate ($56.63)**
Medicare	**$0**	**Facility Rate ($52.76)**

7. Payment Reform

"I think the genie's out of the bottle on this one. I think it's fair to say that the advent of telehealth has been just completely accelerated, that it's taken this crisis to push us to a new frontier, but there's absolutely no going back.

- Seema Verma, CMS Administrator

7. Payment Reform

Digital Health Access is a Public Health Concern

- Advocate for “Digital Inclusion”
  - Broadband access, smartphones
- Fund digital health deployment in less resourced health centers
- Pay parity for telephone and video visits
- Differentiate between visits with a medical home vs. immediate care or virtual care-only providers.

OHSU Digital Health Ambulatory Care Tools

Virtual Visit

- Two way video visit between patient and provider via MyChart
- Provider connects via Epic
- Urgent Care, Primary Care and Specialty Care

eVisit

- Asynchronous communication between patient and provider via MyChart (currently dermatology only)
- Provider access via Epic Inbasket
- Efficient (85% completion success rate. Specialist time similar to eConsult)

eConsult

- Asynchronous communication between PCP and Specialist
- Goal to reduce unnecessary visits to the specialist
- Efficient (90%+ success, PCP completes <10 minutes, specialist completes <8 minutes)

Telemedicine to Outreach Clinics

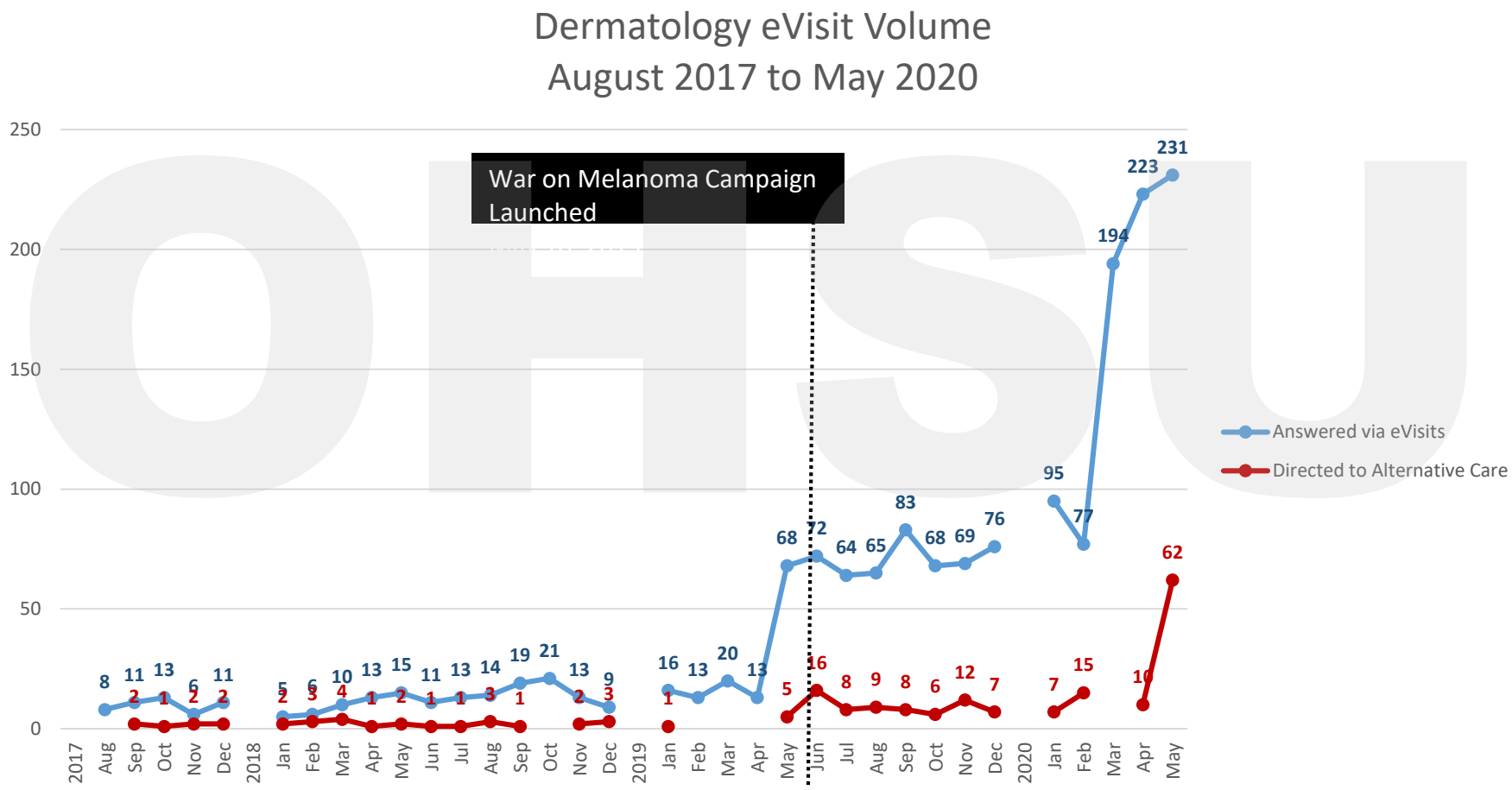
- Two way video connection to clinic with telemedicine capability
- Allows for a higher level of exam due to tele-presenter (vitals, wound exam cams, stethoscope)
- Medicare visits covered when clinic located in rural setting

Telephone Visits

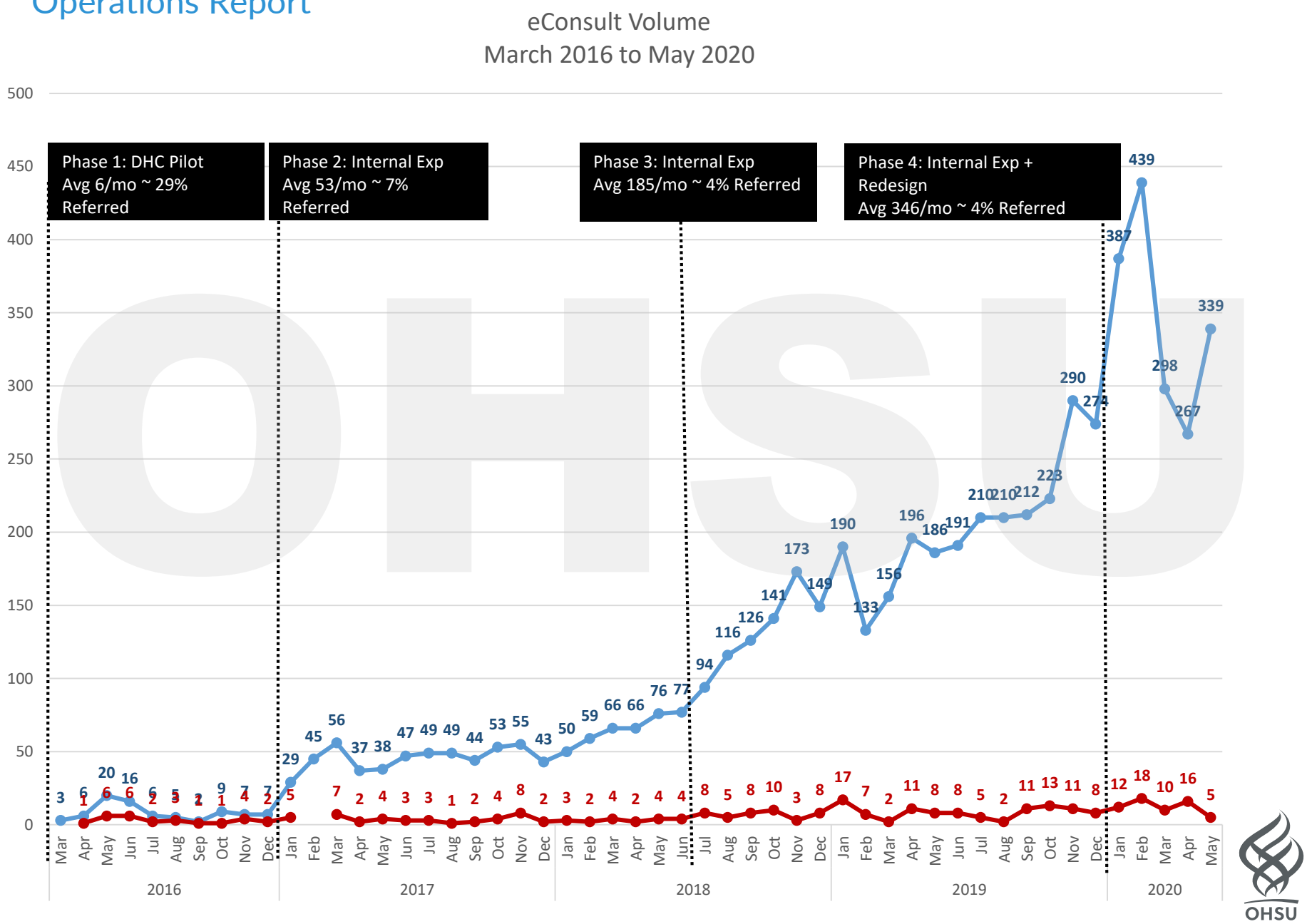
- Visits with established patients
- Low complexity in nature
- Documented in Epic

OHSU

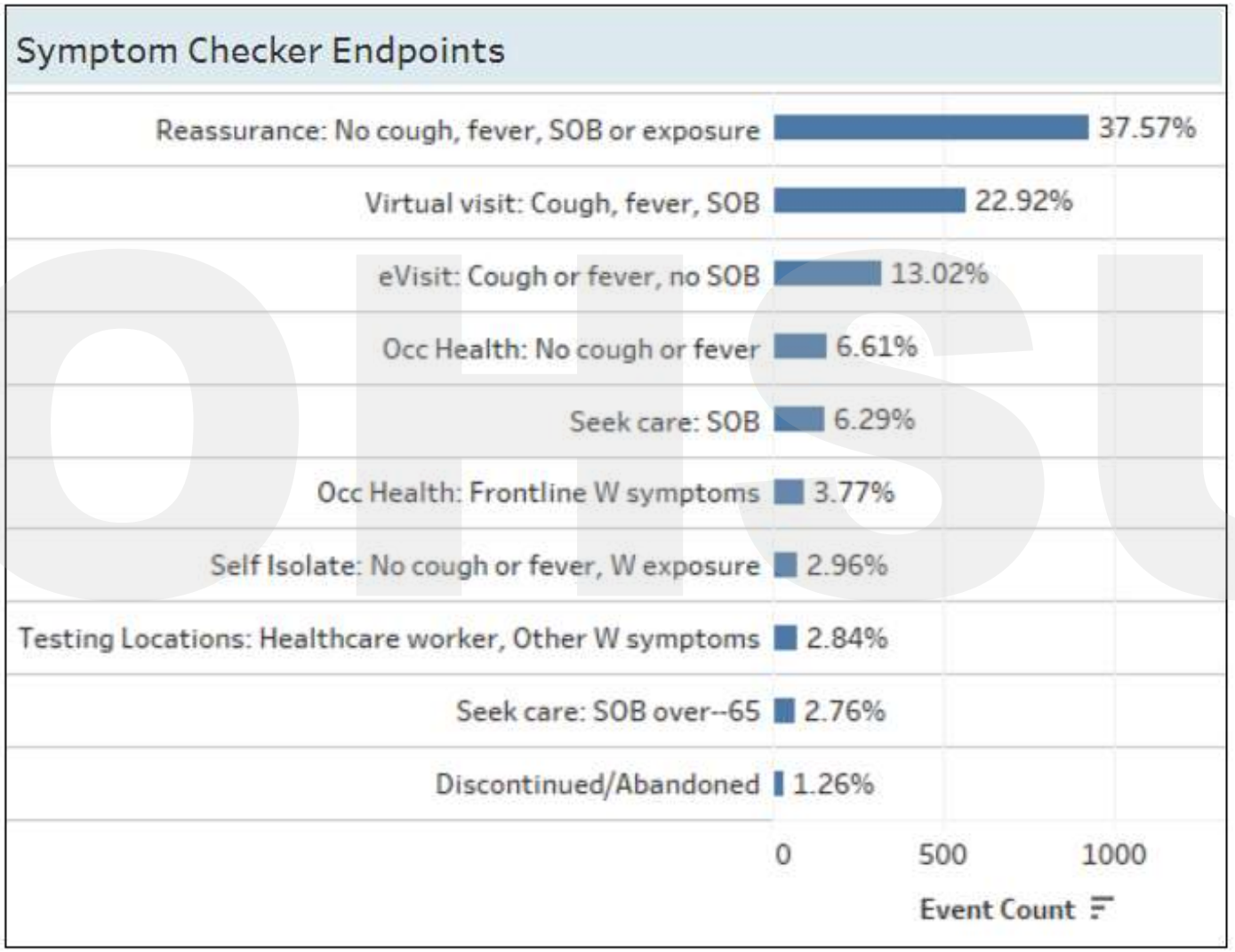
Operations Report: eVisit Volume Data



Operations Report



COVID 19 Screening Tool in MyChart:
Symptom Checker Endpoints from April 2020 to May 2020



OHSU

Remote Patient Monitoring

In home monitoring for patients with chronic disease &/or high risk for (re)admission

- Adult Chemo Symptom Mgmt
- Interstage Monitoring for Single Ventricle infants
- NICU “Feeders & Growers”

- Improve outcomes
- Reduce readmissions
- Facilitate early discharge for safe motivated patients (Home as the 4th campus)
- Patient satisfaction

OHSU

COVID specific response

Ambulatory
- telephone and video
- early adopters to everyone
- from "luxury" to necessary , overnight
- rethink training

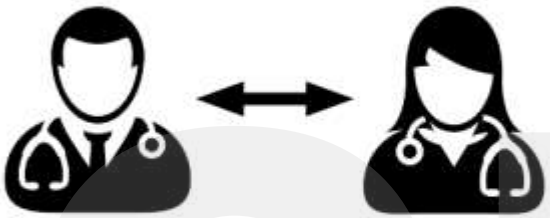
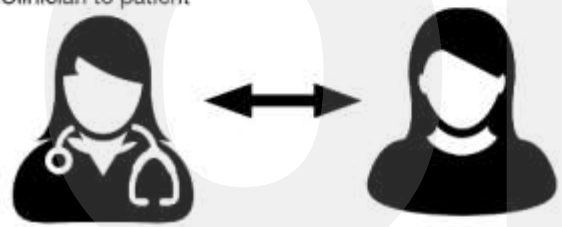
Symptom Checker to triage to appropriate level of follow-up care

COVID Connected Care Center
- RN triage - feeds Virtual Visit as indicated
- Where to get testing in state
- Manage results

Inpatient work
- primary team use to decrease exposure & PPE utilization
- video & phone consults
- code team response

Telehealth Across the Care Continuum

Ways clinicians can use telemedicine for patients' benefit[a]

Interaction	Telemedicine tools	Telemedicine services
Clinician to clinician 	• Clinicians often communicate through email, video, or both	• Dermatology • Radiology • Surgical peer mentoring • Emergency trauma and ICU care
Clinician to patient 	• Video • Phone • Email • Remote wireless monitoring • Internet	• Care for chronic conditions • Medication management • Wound care • Counseling • Postdischarge follow-up • Mental health
Patient to mobile health technology 	• Wearable monitors • Smartphones • Mobile apps • Video • Email • Web portals • Games	• Health education • Monitoring of physical activity • Monitoring of diet • Medication adherence • Cognitive fitness

Integration with electronic medical records
Data analytics

Abbreviation: ICU, intensive care unit.

[a]Adapted from the American Telemedicine Association. http://www.americantelemed.org/main/about/about-telemedicine/telemedicine-faqs. Accessed November 15, 2017.

- OHSU:
- Acute Care
- e-Consults
- Project ECHO

- Virtual Visits
  - to Clinic/SNF
  - to Home
- e-Visits
- Remote Pt Monitoring
- Imaging, Study Interpret
- CCC

- e-Visits
- Symptom Checker

OHSU

Future Considerations

From Telemedicine to
Telehealth to ‘Digital Health’

Equity – Digital Divide

AI tools – SmartExam, Chat-bots

Payment & Regulatory Reform

Defining optimal use cases per
clinical, economic, efficiency considerations

Telehealth Resources

- OHSU Telemedicine
  ohsu.edu/telemedicine
- Telehealth Alliance of Oregon
  ortelehealth.org
- American Telemedicine Association
  americantelemed.org
- Center for Telehealth & E-Health Law
  ctel.org
- Office for the Advancement of Telehealth (OAT)
  telehealth.hrsa.gov

Telehealth Equity Resources

Digital Denied: The Impact of Systemic Racial Discrimination on Home-Internet Adoption

www.freepress.net/sites/default/files/legacy-policy/digital_denied_free_press_report_december_2016.pdf

Healthcare From Anywhere: Telehealth Use & Perceptions in Rural Michigan (Feb 2020) – Connected Nation Michigan

connectednation.org/blog/2020/03/05/healthcare-from-anywhere-groundbreaking-study-looks-at-the-impact-of-telehealth-in-rural-america/

NEJM Catalyst: Innovations in Care Delivery - Addressing Equity in Telemedicine for Chronic Disease Management During the Covid-19 Pandemic

catalyst.nejm.org/doi/full/10.1056/CAT.20.0123

National Digital Inclusion Alliance

www.digitalinclusion.org/

OHSU

Telehealth Equity Resources

Oregon Broadband Office Strategic Plan

www.oregon4biz.com/dev/www/BOR/Broadband-Office/OBAC/Reports/BroadbandStratPlan2020.pdf

Oregon Broadband Map

www.oregon4biz.com/Broadband-Office/Interactive-Map/

Portland Resources for Digital Inclusion

COVID19 response: www.portlandoregon.gov/oct/article/758723Low-cost Computers: www.portlandoregon.gov/oct/article/757365

$10/month internet: www.portlandoregon.gov/oct/article/709742

Digital Divide Fact Sheets (Broadband, Mobile Devices)

www.pewresearch.org/internet/fact-sheet/internet-broadband/

OHSU TeleHealth Services

ohsu.edu/telemedicine o2.ohsu.edu/telehealth


RACISM
IS A
PUBLIC
HEALTH
CRISIS